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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/971,770	10/09/2001	Antonia Maria Tulino	P 283749 T200012US/BR/HER	2489

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EXAMINER	
NGUYEN, TOAN D	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/971,770	TULINO, ANTONIA MARIA	
	Examiner	Art Unit	
	Toan D. Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,7 and 9* is/are rejected.

7)☒ Claim(s) *3-5 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/9/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2-5, and 7-9 are objected to because of the following informalities:

In claim 2, it is suggested to change "A method" to --- The method ---. Similar problems exist in claim 3 line 1, claim 4 line 1, claim 5 line 1, claim 7 line 1, claim 8 line 1 and claim 9 line 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 3-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3 line 2, recites the limitation "the given threshold" lack clear antecedent basis. Similar problem exists in claim 8 line 3.

In claim 4 line 2, it is unclear as to what is meant by "the signal". Therefore, the scope of the claim is unascertainable. Similar problem exist in claim 5 line 2.

In claim 4 line 3, recites the limitation "the interference cancellation operation" lack clear antecedent basis.

In claim 5 line 3, recites the limitation "the interference cancellation" lack clear antecedent basis

In claim 6 line 7, it is unclear as to what is meant by "in which decoder an estimate for the received signal is obtained". Therefore, the scope of the claim is unascertainable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Souissi et al. (5,671,247) in view of Miyashita (US 6,240,122).

For claim 1, Souissi et al. disclose method and apparatus for interference suppression in spread spectrum signals, comprising:

receiving a signal (figure 3, reference 41, col. 4 lines 36-41),

decoding the converted signal with a decoder (figure 3, reference 56), whereby an estimate for the received signal is obtained (col. 4 lines 58-60),

determining an estimate for narrow-band interference properties by subtracting the estimate obtained from an output of the decoder from the received signal before performing the conversion (col. 1 lines 57-60).

reducing effect of the subspace components comprising narrow band-interference signals reduced in the received signal by means of the determined estimate (col. 1 lines 50-60).

However, Souissi et al. do not expressly disclose performing an orthonormal conversion of the signal into subspace components of a desired subspace. In an analogous art, Miyashita discloses performing an orthonormal conversion of the signal into subspace components of a desired subspace (figure 9, orthogonal converter 219

and normalizer 223 constitute an orthonormal conversion) (col. 10 line 24 and col. 10 lines 40-41).

One skilled in the art would have recognized an orthonormal conversion, and would have applied Miyashita's demodulation signal generator in Souissi et al.'s receiver. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Miyashita's receiving apparatus of code spread communication type in Souissi et al.'s method and apparatus for interference suppression in spread spectrum signals with the motivation being to convert the signal of a sequence of two bits to four symbol points and to have their amplitudes made constant (col. 10 lines 24-41).

For claim 2, Souissi et al. disclose the step of suppressing the subspace components that comprise narrow-band interference signals from the received signal (col. 1 lines 50-60).

As far as understood with respect to claim 6, Souissi et al. disclose method and apparatus for interference suppression in spread spectrum signals, comprising:

interference cancellation means for suppressing a narrow-band interference signal from a received signal (figure 3, reference 40, col. 4 lines 31-41),

a decoder (figure 3, reference 56) connected operationally to the output of the interference suppression means, in which decoder (figure 3, reference 56) an estimate for the received signal is obtained, the output of the decoder(figure 3, reference 56) being operationally connected to the interference suppression means (col. 4 lines 58-60), wherein

the means to determine an estimate for narrow-band interference properties, in which determination the estimate obtained from the output of the decoder is subtracted from the received signal before the orthonormal conversion is performed (col. 1 lines 57-60), and

by using the determined estimate, the interference cancellation means are arranged to reduce effect of the subspace components comprising narrow-band interference signals in the received signal (col. 1 lines 50-60).

However, Souissi et al. do not expressly disclose the conversion means are arranged, and the conversion means for performing an orthonormal conversion of the signal into subspace components of a desired subspace. In an analogous art, Miyashita discloses the conversion means are arranged (figure 9, orthogonal converter 219 and normalizer 223 constitute an orthonormal conversion), and the conversion means for performing an orthonormal conversion of the signal into subspace components of a desired subspace (figure 9, the orthogonal converter 219 and normalizer 223 constitute an orthonormal conversion) (col. 10 line 24 and col. 10 lines 40-41).

One skilled in the art would have recognized an orthonormal conversion, and would have applied Miyashita's demodulation signal generator in Souissi et al.'s receiver. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Miyashita's receiving apparatus of code spread communication type in Souissi et al.'s method and apparatus for interference suppression in spread spectrum signals with the motivation being to convert the signal

of a sequence of two bits to four symbol points and to have their amplitudes made constant (col. 10 lines 24-41).

For claim 7, Souissi et al. disclose where in the interference cancellation means are arranged to suppress the subspace components comprising narrow-band interference signals from the received signal (col. 1 lines 50-60).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Souissi et al. (5,671,247) in view of Miyashita (US 6,240,122) further in view of Herzog (US 6,473,417).

For claim 9, Souissi et al. in view of Miyashita do not expressly disclose where in the decoder is a turbo-decoder. In an analogous art, Herzog discloses where in the decoder is a turbo-decoder (figure 2, reference 260, col. 4 lines 25-27).

One skilled in the art would have recognized a turbo-decoder, and would have applied Herzog's decoder in Souissi et al.'s receiver. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Herzog's method and apparatus for interference cancellation for a high data rate user in a CDMA system in Souissi et al.'s method and apparatus for interference suppression in spread spectrum signals with the motivation being to inverse of the encoding algorithm used by encoder (col. 4 lines 25-28).

Allowable Subject Matter

6. Claim 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

7. Claims 4-5, and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D. Nguyen whose telephone number is 571-272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER